/224 cont./

and showed me how the raw cotton, merely cleaned of seeds, is twisted into thread with the spindle. The cotton plants stand between the huts everywhere. Beside them grows mamona /castor oil plant/, whose oil serves us for wretched illumination in the evening, and peppers. Mats are spread out on racks in order to dry the mandioca farina.

The roça," the cultivated field, lies some distance away. The Bakairí plant mandioca, beans, rice, sweet potatoes, sugar, and deliver to the Fazenda Corrego fundo. Their rapadura was excellent, the melado, a honey-sweet syrup, moved us to exclamations of admiration. The sugar cane is pressed between two cylinders in the simplest way. (Cf. the vignette at the be-

Old-style hut.

ginning of this chapter /see p. 2/).

We found Caetano's hut divided into three rooms. Caetano received us in the high, airy center room and shut the door, behind which little Luiza was doing housework. Felipe and Carlotta Parecí lived in the corner room opposite. Three canga blocks formed the hearth. Plaited back-baskets, which are carried by a forehead band and in which the women are said to carry up to six arrobas. Graters to grate the mandioca: hard little spikes from the rib of the buriti leaf are neatly set into the middle part of a narrow piece of wood almost a meter long.

/166 cont./

289 291 The triangular garment of the women, a folded piece of bark bast, supposedly from the schischí tree, has a base of four centimeters and a height of one to one and a half centimeters.

A girl about ten years old is still completely naked.

302 [304] /165/ The nasal septum of the men is not pierced. the beard hair, if a natural tendency for it is present, as well as all the hair (among the women, too) with the exception of the head hair, the eyebrows, and eyelashes, is carefully removed.

224 [222] 162 Around 10:00 in the forenoon Claus came with Antonio. a few men also arrived from hunting. among them the chief, an older gentleman with an anxiously serious official face and a fat little belly. We count ten men, seven women, five boys, four girls.

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Clothing of the Bakaïrí women.

372 Paulaga showed us how they make fire. They take two long, thin sticks of the same dry wood. into one a notch is scraped, while one man now holds this in position on the ground with two small sticks, a second man twirls the other stick rapidly between both hands in the notch. The dust that is rubbed loose glimmers.

126 We did some bartering. I measured a few men. They patiently allowed it to be done.

157 These "wild" Bakaïrí are alert, teachable, and certainly very good-natured. They do not steal, although we are carrying [273] [274] treasures with us. They have no intoxicating drink; they refuse tobacco. On the second day, together with their wives, they visit 609 us in our camp -- the "docile ones" on the Rio-novo, on the other hand, preferred to sleep with those in the bush as long as we were in the aldea. On the first evening a savage drinks a medicine that I

/170 cont./

291 Besides these products of the most primitive carving art,
/171/ the most interesting article was: a buritî shirt -- "the"
shirt of the upper Schingû -- which proved the invention of
[Pic] clothing even among the Bakairî. The fibers were knotted
in meshes, following the method for the hammock; the
doublet was wide at the neck in order to be stepped into; it
had short sleeves and trousers, from the bottom edge of which
long fibers hung down. Many simple, meter-long buritî-fiber
377 hangings seemed apron-like. Two triangular fire-fans had
239 small downy feathers pasted on them. Hard, open shells,
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352
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In the Bakairî festival-hut.

535 the size of half-walnuts, were gathered into a rattling bundle
534 that is tied around the ankles for dancing. Another rattle
instrument was a dried gourd shell, which contained seeds,
impaled on a stick (1).

[n1]

1. Hans Stadl (1556) tells of the "Tuppin Inbas": "They believe in a thing that grows like a gourd, is as large as a half-measure scoop. It is hollow inside; they stick a little stick through it, cut a little hole in it, like a mouth, and put little stones in it,

/60 cont./

353 remained free, was the kitchen and storage place for supply baskets, pots, earthen beiú pans, sieves, mats, back baskets, mortars, pestles, and calabashes. Sticks were plaited with vines onto the main posts, where again gourd bowls or bundles [532] [251] of tobacco were hanging, from a cross beam dangled large birds with straw-plaited legs and tails, which looked very mysterious and were solely for the purpose of storing the maize ears, out of which their insides and wings were constructed, in a manner pleasing to the eye. The floor was covered with a stone-hard deposit of the fine white mandioca flour, the mortars and pestles were flour-white, and the pots smoke-blackened. Above the doors, baskets with calabashes, basket-weirs, fishing nets, on the walls of the "rooms," bows, stone axes, the gaily feathered arrows projecting out of the straw of the dome, a stock of small baskets, drinking bowls, and smaller utensils, on the floor, white balls of loam, little pots, stools, pieces of wood, fire fans, and the ashes of the small fire which everyone maintains at night beside and almost under his hammock; hanging on the hammock, a small bunch of colorful feathers and the comb, here and there a pyramid made of rods with the grill. /61/ a couple of the sticks with which [377] fire is rubbed were also hung up and beside them was tied a small packet of the tinder bast.

356 In short: family dwelling in full operation, precisely as [353] much disorder as was required for comfort, everything clean [412] and nicely arranged, everything hung up, boxed, turned upside down, no iron nails and screws, but only cord and plaiting, all worked with stone ax, animal tooth, and shell. Total impression: the wall, the hammocks, the calabashes, the human beings, brown; brown in every shade, but harmoniously 342 tinted, all crust /Knaus/. Here and there the sun shone through a crack in the straw dome, in front of the door the daylight was sharply cut off, and the lane between the doors lay in semishade, through the vent, which was quite tightly closed, a few bright rings and circles fell on the floor, and faint motes of sunlight danced in the ascending smoke.

2: Steinen- 202E,D-5 (1884, 1887-1888) 1894 SP? Bacairi SP7

/204 cont./

*171 412 no triangular arrowheads of stone, no stone knives, no celts, no stone saws, no scrapers, etc. Among the Bakaïrí I struck two pieces of sandstone containing iron together so that sparks shot out and to my amazement saw that they were not familiar with the phenomenon. They were Neolithic people who could have learned many a useful craft secret from the Paleolithic fraternity.

000 I do not venture to say that the Schingú Indians lived in the *[171] "Tooth Age," the "Shell Age," or "Wood Age," although, as a 321 matter of fact, the great majority of weapons, tools, implements, 322 and ornaments are put together out of teeth, shells, and wood, • 372 and they produced fire by rubbing sticks. I do not venture to say this even with regard to the eastern Brazilian forest tribes, among whom the stone ax must have played a wholly secondary role, since they neither carried on agriculture nor built canoes or solid huts. Obviously, however, it is only the transference of ideas gained elsewhere -- and in connection with excavation, in a very understandable way -- if, in order to identify the cultural level, one selects from among the natural materials available for tools and weapons that which has been worked and used least of all. The culture of the old Brazilian hunting tribes living in the forest will be very much misunderstood if, with the classification of "Stone Age" peoples, /205/ the image of people of the Ice Age is conjured up. We impede our study of the spatial distribution of culture circles and man's dependence on his place of residence; every tribe learned to utilize the material of its environment, upon which it was dependent, and thus has come into the possession of methods which a neighborhood only sparsely supplied with the same materials would not have found, but which it learns to use and exercise only for its own advancement. Bastian says, "it appears to be conditioned by the geographical environment whether, beside the Stone Age preceding the metals, there must be put a Wood Age (as in the Brazilian alluviums, for example), a Bone Age (in the case of livestock on barren plains or hunting in such areas), or a Shell Age (as occasionally on coral islands)." I therefore prefer to

/220 cont./

The influence on the animal kingdom was strange and remarkable. All beasts of prey very deliberately made use of the occurrence, sought and found their victims, not so much near the blazing fire as on the smoking burned place where many a rodent was probably charred. Numerous falcons hovered over the dark clouds of the "queimada"; wild game hastened to it from far away, to lick the salty ash, and preferred the night, perhaps because it could not hide on the bare expanse. The ground radiated an agreeable warmth.

224 539 Hunting by means of fire is found among many primitive peoples. The Schingú Indians no longer seemed to practice it, but in any case it was well known to the Bakairí, /221/ and the legend of "Kame in the Mouse" tells us that Keri went hunting with the possessor of fire, the campo fox, and the latter caught "only a burned mouse," inside of which was Keri's brother Kame:

"Keri met the campo fox. "Let's make fire in the campo, grandpapa," said Keri. They set out to make fire; it burned all around. Kame was in a mouse. Keri did not know that he had gone inside. The fire burned down and stopped. Keri hunted, did not see a mouse. The campo fox found a burned mouse. After he saw it, he ate it. He met Keri. "Grandpapa, what kind of roast did you eat?" "I ate only a mouse."

● 392 The "queimada," or burned place, furnished many experiences about the usefulness of fire: fleeing animals when the fire began, later charred animals and fruits, animals that came to * 191 251 it, salty ashes, warmth. Here the hunter could learn how to roast meat, which, on a smaller scale, took on the significance for him that flour preparation has for the field cultivator. Roasting preserves. After many days roasted meat, which otherwise would long since have become putrid, is still tasty; the Bororó went out hunting for weeks and returned with a rich supply of roasted game; the Aueto were absent for several days on fishing expeditions and brought home a canoe heavily laden with roasted fish; among the Mehinakú we saw baskets filled with very appetizing, golden yellow baked fish. Even today roasting is continued until the meat has a thick charcoal crust -- the burned skin --with a very popular salty taste.

/223 cont./

mentally assimilated only by a person who is already in possession of the separate processes. If now and then the storm actually started a fire, man probably quickly took a brand so that wind or rain would not extinguish it. Perhaps he also observed that a falling tree killed an animal and, happily frightened, seized the unexpected booty, but we would rather not date from this historic moment his having reached for the club and found a weapon with which to kill animals. He must have learned these skills in some other way. Up to the present time such an extremely simple explanation for any primitive achievement has not been satisfactory; it has always soon been realized that there had been produced a more or less ingenious myth which lacked only the name of the originator to merit adoption in popular mythology. Today, too, the fancy of the speculative mythologist, praised or condemned, is perpetuated in all the literature, along with the Prometheus legend, and will, it seems, always be associated with it.

It is clear that we must not be led astray by the subsequent mystic, poetic, religious, or scientific conceptions related to fire and regard primitive man, who is a sober, limited, practical individual, as something he is not, either as a philosopher or a modern inventor. If we turn to living experience, the obstacle immediately disappears at the start, namely, the contradiction, which is not insoluble except in an age of fully developed property concepts, that a thing will strike terror and at the same time become indispensable day and night.

For the first stage, with the origin of which we need not concern ourselves further here, when man reached the point of deliberately keeping the wild, free fire burning and making it permanently serviceable to himself by continuous transplanting, with all its advantages, the comparison that he established, tended, and tamed it, like a species of domestic animal, may not be inappropriate. But it is only with the further problem of how the method of producing fire came about that we find ourselves on firm ground among primitive peoples; we immediately see among them various methods for this work, and they must therefore be examined in connection with other work methods.

It was from this point of view that I tried to gather information

/223 cont./

*171 194 372 ● among the Schingú Indians, and I believe I shall be able to prove how their way of producing fire must have originated. It is the simplest one of the "fire drill," very widespread in America and other parts of the world, whereas in Polynesia a "stick" is rubbed in a "groove."

*171 372 /224/ The natives take two sticks not quite as thin as a little finger, about three-fourths of a meter long, and still covered with the bark that keeps them dry, and cut a small depression into one with a shell. While one man lays this stick on the ground and keeps it firmly pressed down, a second man sets the other stick into the depression and twirls it with great speed between his hands which glide nimbly up and down on it. Through the twirling the little depression is enlarged, a fine dust is loosened, and this begins to glow and to smoke. Tinder is brought forth, blown upon, and immediately the flame is there. The small depression now appears extremely smooth and charred on the surface. The process from start to finish does not take a minute. The one who twirls really exerts himself, it would be an exaggeration to make more of it, although a person who is not practiced and allows small pauses to occur, which is detrimental to the result, will not succeed without a supreme effort. In an emergency, a single individual will manage very well with the procedure by holding the stick firmly on the ground with his feet.

[824] The fire sticks are usually two straight twigs from the orlean bush or urucú, which have a light, porous wood. Other wood, too, has "fire in it," as the Indian understands it, especially ubá and kambayuva, the two types of arrow reed. If the hunter on his way has no fire with him and needs it, he knows how to help himself: he breaks an arrow and drills one piece into the other. The arrow is precious, however, and rubbing is strenuous. We several times observed that the men on their way to the harbor and into the forest took along burning chunks from the smoldering clearing, which they later heedlessly tossed aside. On excursions that involved an absence from home for days they took along with them in the canoe a huge smoldering piece of dry rotten wood from the forest.

/224 cont./

*171 ●372 [824] The tinder is a light brown, fine meshed bast tissue which is furnished best by the young uakumá palm (a Cocos species). In the campo, tinder from the guarirobá palm (Cocos oleracea) or of dry grass and leaves also helps out. Its purpose is to furnish the flame with which one transfers the fire to the twigs. Ehrenreich reports from the Karayá /Caraja/, Im Thurn from the Warrau of Guiana, that their wood catches fire so easily that it does not need tinder; "it in itself furnishes the tinder."

As is seen, it is not necessary to have a hard and a soft wood for rubbing fire with the "drill" /Bohrer, borer, drill, auger/. The Schingú Indians always take only one kind; the Karayá drill bamboo in ururú.

ooo We find the movement of twirling very difficult; indeed, we are scarcely acquainted with it in everyday life because our drills terminate in a screw, and we do not use it at all for drilling, but for mixing, for example, in the kitchen, to mix yeast or eggs with milk, or in connection with the preparation of a cocktail.

*171 174 412 It is easy to understand how the drilling and twirling of the natives originated. At first holes were made with a pointed tooth or bone. /225/ When the object was very resistant, a turning pressure against and into it was tried, and this gradually and naturally developed into the twirl-drilling, if only one worked steadily and evenly so as not to split the object, clamped it down securely so as not to lose the point drilled on, and thus had both hands to work with. This twirl-drilling is practiced by the Indian with a [321] tooth or particle of stone fastened to a little stick (cf. p. 201) for all piercing of shells, bone, stone, armadillo carapace, and hard wood. One very often sees him occupied with it, using his feet ooo as a brace. We are now, however, confronted with a riddle if we wish to explain how this fire-drilling with two pieces of wood could have originated. How did people happen to drill wood with wood if they were not purposely setting out to "invent fire?"

It has been said in all seriousness that in grinding or drilling tools out of wood, bone, and stone, people found by experience that friction produces warmth, they observed that the warmth increases the harder the rubbing, and they then tried to rub

/225 cont./

000 wood so hard that it would not only become warm, but also glowed, lighted, burned! If the gentlemen who make this suggestion about our revered ancestors were stranded on an uninhabited, wooded coral island -- I am willing to assume, with some protest, that with their technical and theoretical knowledge they would hit upon the idea of rubbing wood with wood to make a campfire for themselves. The man of prehistoric times, however long he had had live fire and had known its value, could have been purposely forced to the discovery only if the wood warmed by rubbing had also glowed; then he would perhaps have made the attempt to increase the glow to a flame. The Bakaïrí, for ex-
[392] ample, actually reasoned in this way. The campo fox, they said, struck fire out of his eyes.

In the aforementioned suggestion for the solution of the problem, there is, however, a sound core, namely, that one should not allow too much room for chance concerning an invention. Actually, if one wishes to believe that people only incidentally, in connection with the making of tools, made the observation that fire is produced when wood is rubbed or drilled with wood, then it should at least be presented in a direct and intimate connection with the use of fire. If wood was drilled, it was undoubtedly drilled with tooth, bone, or stone, and although it is possible that on occasion, if this material were lacking, a hard piece of wood was used for twirl-drilling, which then produced a smoldering powder, this undeniable possibility does not seem quite convincing to me because it does not grow out of the fire technique itself. Nor can one see, for a practical case, if the customary tool were lacking, why people would necessarily set such great store by boring through wood that they chose the laborious method and did not achieve their purpose more conveniently by tying or breaking or some other way. A little /226/ reflection and a few facts lead us to an approach that is possibly more promising.

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392 Man had fire, kept it going, but could not produce it. It is clear that the first skill which had to be learned and was learned at this stage was to revive the fire and transfer it to another place.

/226 cont./

*171 ●392 Several times on the expedition's return trip, during the rainy period, we were able to maintain sufficient fire only with great trouble in the morning, although the log was still glowing; all the wood was wet and would not burn. Our men were able to remedy the situation only by peeling the bark off the damp twigs and whittling out with a knife a few rather dry shavings from the inside, putting these with great care and patience, almost individually, on the glowing coals, and then gradually blowing up feeble flames which, cleverly nursed, would grow stronger to become a vigorous fire. Im Thurn describes the same procedure among the Guiana Indians. It is reported of the North American natives that they carried glowing tree fungi with them all day and thus transplanted their campfire from place to place. The decayed logs which our Indians took along in the canoe easily smoldered for one or two days.

000 The technique of tinder was developed early, before fire could be produced at will. People transferred the fire from a feebly glowing log to twigs by adding dry stalks, shavings, leaves, or the like. They learned to know the parts of plants that burned easily. For their wanderings they provided themselves with tinder of spongy plant fibers; they also kept a supply of it at their camp site, since any rain or negligence might extinguish the fire. They used the shavings whittled loose during working on wood, stone-ax handles, and weapons, or, if they bored through wood with tooth, shell, or stone, the dust resulting from this. If this natural tinder was lacking or was perhaps soaking wet, they simply made some. With their tools of tooth, shell, or stone, they pulverized, scraped, or whittled light wood. When the ax blade was inserted in a wooden groove and lashed there -- in this way it could be more easily attached at an acute angle and put in the position most suitable for canoe building -- they may have scraped the tinder dust into a groove, here, as well as when the wooden handle of the stone ax was bored through crosswise, they probably did not overlook the fact that the dust falling at the time was especially fine and easily inflammable. They observed that the relatively heavy, less quickly kindled wood tinder glowed for a longer time than spongy fiber and pith.

/237 cont./

*171 285 [482] Bakaïrí used for the very differently constructed carrying basket. The accompanying illustration /see Fig. 31, p. 247/ shows the three-walled carrying basket used by all tribes, the "mayáku" of the Bakaïrí, while the manner in which it is carried, hanging from the head with a bast loop, may be seen in the picture of Tumayaua, Plate 6 /see p. 40/. The contents were covered with leaves, which are also used to line the inside; then the side walls were bound together as tightly as possible. Small back-baskets were even hung on children.

The storage baskets for the mandioca flour should also be mentioned. While the lower tribes had clumsy supply baskets, resembling the back-baskets in form, those of the Bakaïrí (oádu) were the product of careful work. Five or six thin poles as tall as a man were put together with a couple of cross-rings of vines to form a circular framework supported in some way, this was lined with Heliconia leaves, several of which were strung over one another with thread, spread out, and on the outside wound in horizontal circular turns with reddish pindahyba bast from bottom to top, with the bast knotted continuously from piece to piece. While this type of basket was therefore unplaited, there were others with an open, hexagonal /238/ mesh plaiting, which were likewise lined with leaves. The baskets were hung by strips of embira.

● [372] [352] [252] The plaiting of mats did not play an important role. Small fan-shaped or square mats for fanning the fire were very pretty. Larger mats for sleeping were lacking, since hammocks were used. Mats were used in the preparation of flour, first of all drying mats plaited out of palm leaves, and then sieve-mats consisting of four-edged small reed rods knotted together with cross-threads for sifting and pressing out the roots grated on the grating boards studded with palm spines. Similar rod mats served as cases for storing feather ornaments. The feathers were placed in them as in a file folder; the mat was then held stiff by means of three clamps, one each on the top, on the bottom, and in the middle, made by bending split reed stalks together and, with the cut side lying against them, stretching them across transversally and tying the projecting ends together at the right.

/238 cont./

128 I shall discuss the reed diadems and plaited dance costumes in the chapter on masks.

*171 283 286 [462] Textile work. The material: pineapple silk, aloe hemp, palm fiber from the tucum and buriti, and cotton. The fibers are put in neat bundles, and twisted on the thigh, but the cotton tufts, on the other hand, are drawn out into a thread by means of the spindle likewise made to turn rapidly on the thigh and then spinning freely. Only the women spin and weave. The fiber strings serve as the actual tie-threads and ropes; fish nets, carrying nets, in certain cases hammocks, and finally bowstrings are made of them. Knitting is done with bamboo rods or long wooden needles that have eyes.

*171 ● 392 285

Fig. 32. Fire fan (1/9 nat. size /in the original illustration/.)

*171 283 [239] The spindle is a disk through which is stuck a thin, not very straight, and smoothly worked stick sometimes notched at the tip. To it is attached a tuft of cotton, freed of seeds, whereupon the whorl is rapidly turned on the thigh and the whole allowed to hang; as a result of the even rotation, the cotton is twisted into a thread. The thread is wound on the little stick, until a thick, cone-shaped ball rests against the whorl, which prevents it from slipping off. Diameter of the whorl-disk, five and a half to six centimeters; length of spindle shaft, 30-35 centimeters. The whorl usually consists of a piece of the ventral shell of the turtle,

/37 cont./

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III. Plaited Objects of the Bakairí in Simões Lopes

Most of the plaited objects that I acquired from the Bakairí in Simões Lopes belong to that kind of plaiting which I called in my respective previous publications Stufengeflecht (stepped plaiting).

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The two fire fans shown in Figures 35 a and 35 b (a:(above) V.B. 9918. Length of the upper rim 45 cm. Width 19 cm. b. (below) V.B. 9919. Length of the upper rim 43 cm. Width 17.5 cm.) are similar in their external form to those, with which we are familiar, of the Kuliseh Bakairí of former times, but in regard to technique they already show certain signs of degeneration. In the chapter "Geflechte und Geflechtsornamentik im Xingú-Quellgebiet /Plaited Objects and Their Ornamentation in the Headwater Region of the Xingu/" in my already-mentioned book, Indianerstudien in Zentral-Brasilien, I dealt at length with the technique used in the construction of such fire fans, because these plaited objects were especially suitable to show the dependence of the ornamentation of plaited objects on the technique of plaiting used in their construction. It is possible to determine exactly the specific units in the plaited object and the order in which they were successively fashioned, and the specimens shown in photographs in the work mentioned clearly reveal how the ornamental lines between these specific units of the plaited article and, successively, the overall ornamentation of the respective fans, are intimately bound to the technical conditions of the plaiting. Thus, in all fans of this kind /obtained/ from the Kulisehu Indians, the two triangular units of the plaited object, which begin with their bases on the two sides of the lower edge of the object, are striped horizontally, that is to say, parallel to the lower edge, while the middle part of the fan, which integrates /?/ the beginning of the plaited object and is shaped like a square resting on its corner, is usually striped vertically.

/37 cont./

285 As shown by the fan represented in the photograph in Figure 191
372 of the above-mentioned book, there are cases where this middle
531 part is striped horizontally without this leading to /38/ technical complications, and as in these cases also the two triangular units of the object, which begin with their bases on the two sides of the lower edge of the fan, are for technical reasons striped horizontally. All of these plaited units in this fan have the same ornamental striping. But the vertical striping that runs throughout the fan represented in Figure 154, a /35 top?/ and coming from Simões Lopes is incompatible with the technical conditions of the ancestral form of these plaited objects. The structure of the plaiting of this fan shows that it, too, was plaited so that the work began in the middle part of the fan in the shape of a square resting on one corner, and then the two lower triangles were made by folding and plaiting the free
285 ends of the fibers used to make the middle part. Among the
372 numerous specimens of such fan at the Berlin Ethnographic
178 Museum, there are none whose triangular parts at the lower
531 base of the fan show striping going in a vertical direction, and the imperfection of the lower edge of the fan from Simões Lopes, in comparison with the firm, smooth edges of the fans from the Kuikuro Bakairí, clearly shows that in the case of the fan from Simões Lopes we are dealing with a degeneration of the Bakairí plaiting technique, which in times past was more skillful and more dependent on certain principles. The fine fan shown in Figure 154, b /35 bottom?/ also contains, in spite of its superficial good look, so many imperfections in the ornamentation and so many irregularities in the structure of the plaiting that its later origin is at once evident.

285 There is a great similarity, we might even say identity,
184 between the flat baskets acquired in Simões Lopes and those
171 which the Bakairi of the upper Xingu tributaries made in former
531 times. The flat basket shown in Figure 36 (V.B. 9909. Diameter 51 cm.) is surprisingly similar to such a basket collected by Herrmann Meyer from the Nahukuá and described

4:Schmidt--74 E-5 (1901, 1927-1931) 1947 SP7 Bacairi SP7

Plate XVI

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372

Fig. 35. Fire fans. Bakairí in Simões Lopes.

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Fig. 36. Fruit basket made from two buriti leaves. Bakairí in Simões Lopes.